10

35

45

37

40

20

15

25

30

FIG. 1

Figure 2

Storage Device

63_1
63_2 63_3
63_n

62

64_1 64_2
64_n

Directory

65_1 65_2 65_n

Subdirectory

Figure 3

97_1

File Header
Module 1 Header
Module 1 Body
Module 2 Header
Module 2 Body
. . .
Module N Header
Module N Body
EOF Marker

100

110_1

105_1

110_2

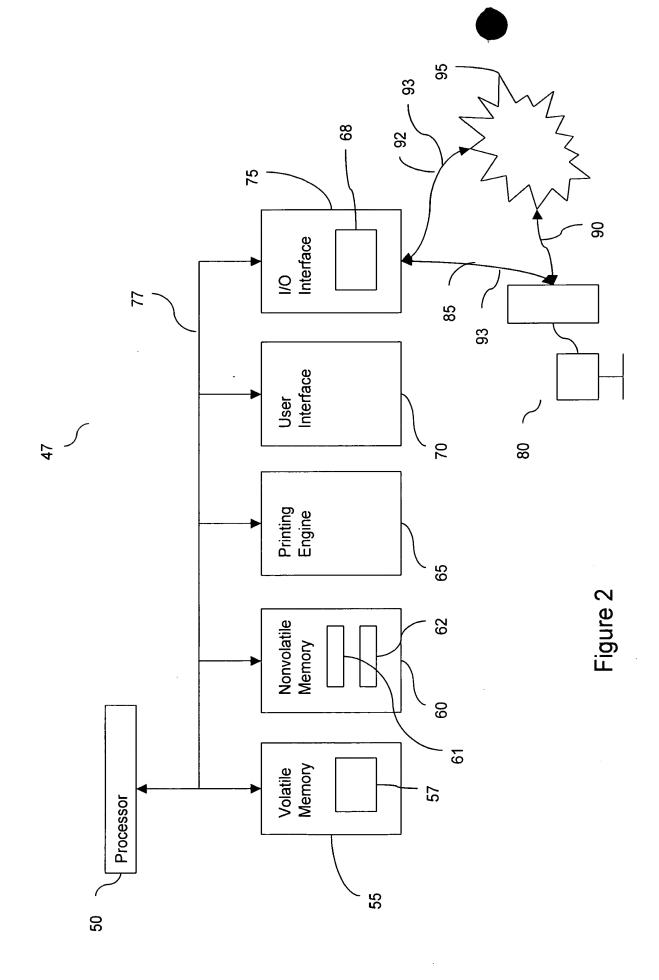105_2

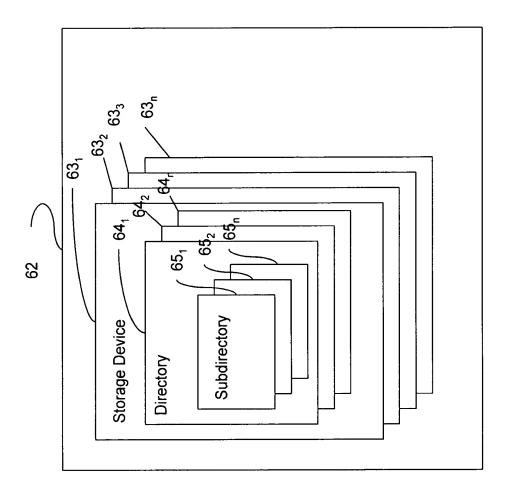110_N

105_N

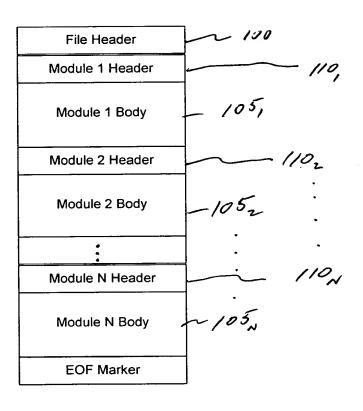Figure 4

Note: in the format listed below:
<UEL> is   <ESC>%-12345X
<ESC> is   0x1b
<SOH> is   0x01
<STX> is   0x02
<ETX> is   0x03

Byte Count	Bytes	Contents	Description	
9	0 – 8	<UEL>	User Exit Language	115
7	9 – 15	<ESC><SOH><STX>CODE	Lead-in (Note the word "CODE")	120
19	16 – 34	ASCII 19 chars including NULL	Version	123
4	35 – 38	UINT32 XXXX	Number of modules (hex fmt)	125
1	39	INT8 X	Destination Printer: (hex fmt) 00: Don't Care which Printer 01: Diamond Printer 02: Puma Printer .	130
2	40 – 41	INT16 XX	Minimum Memory Needed (in MB)	135
81	42 – 122	ASCII 81 chars including NULL	Status Page Descriptor – Upper	165
81	123 – 203	ASCII 81 chars including NULL	Status Page Descriptor – Lower	170
31	204 – 234	ASCII 31 chars including NULL	File Content	175
8	235 – 242	123456789ABCDEF123	Printer Signature	180
4	243 – 246	UINT32 XXXX	Header Checksum (hex fmt)	185
1	247	ASCII 'S' to suppress	Suppress Status Page	190
1	248	INT8	Download and execute first module Bit 0 0 - Not active, ignore all other bits 1 – Download and execute the first module Bit 1 0 – Current code downloads the rest of the file. 1 – Let the new executable download the rest of the file Bit 2-7 Unused	195
7	249 – 254		Optional Data – Unused	200
1	255	<ETX>	Lead-out	205

Figure 5

2

140

IBM Infoprint 21   IBM LOGO

Microcode Update
http://www.ibm.com/printers

145 ──────── | Status Page Descriptor - Upper |

150 ────── MICROCODE UPDATE STATUS = oxfe – MCU STATUS CTL Full Code Download Success

Original CTL Version 1.043001
Original IPDS Version 0.24

Current CTL Version 1.044002

Current IPDS Version 0.24

160 ──── | Status Page Descriptor - Lower |

FIGURE 6

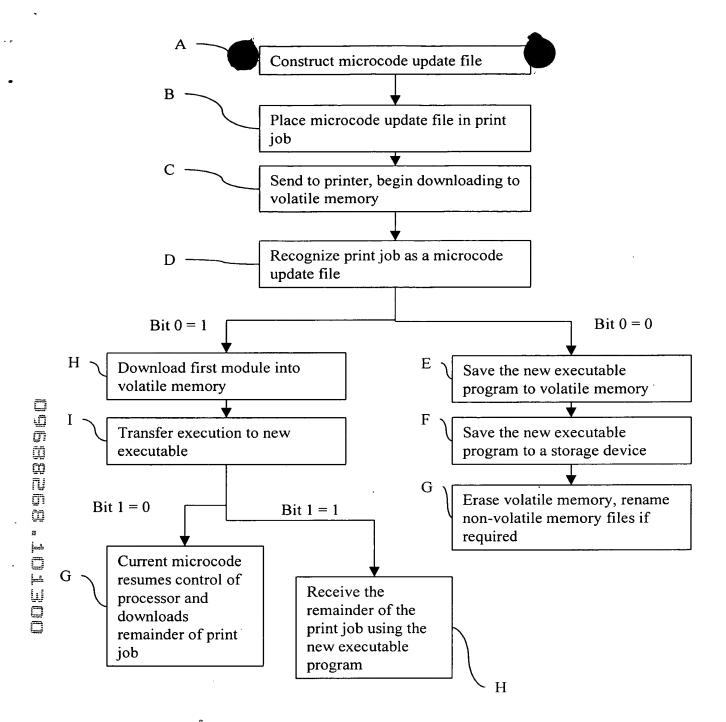| Byte Count	Bytes	Contents	Description	
6	0-5	MODULE	Tag (the word "MODULE")	210
31	6-36	ASCII 31 chars including NULL	Module Name	215
19	37-55	ASCII 19 chars including NULL	Version	220
4	56-59	UINT32	Date in Seconds from 1/1/1970	225
41	60-100	ASCII 41 chars including NULL	Target Location Path	230
1	101	INT8 X	Bit Flags (hex fmt) 0x01 Uncompress the module (gzip) 0x02 Create File 0x04 Delete File 0x08 Create Directory 0x10 Delete Directory 0x20 CX/TX NIC Code ...TBD	235
4	102-105	UINT32 XXXX	Total Bytes of data after module header (hex fmt)	240
4	106-109	UINT32 XXXX	Checksum (hex fmt)	245
18	110-127		Optional Data – Unused	250

FIGURE 7

A —— Construct microcode update file

B —— Place microcode update file in print job

C —— Send to printer, begin downloading to volatile memory

D —— Recognize print job as a microcode update file

Bit 0 = 1

Bit 0 = 0

H —— Download first module into volatile memory

I —— Transfer execution to new executable

E —— Save the new executable program to volatile memory

F —— Save the new executable program to a storage device

G —— Erase volatile memory, rename non-volatile memory files if required

Bit 1 = 0

Bit 1 = 1

G —— Current microcode resumes control of processor and downloads remainder of print job

Receive the remainder of the print job using the new executable program —— H

FIGURE 8